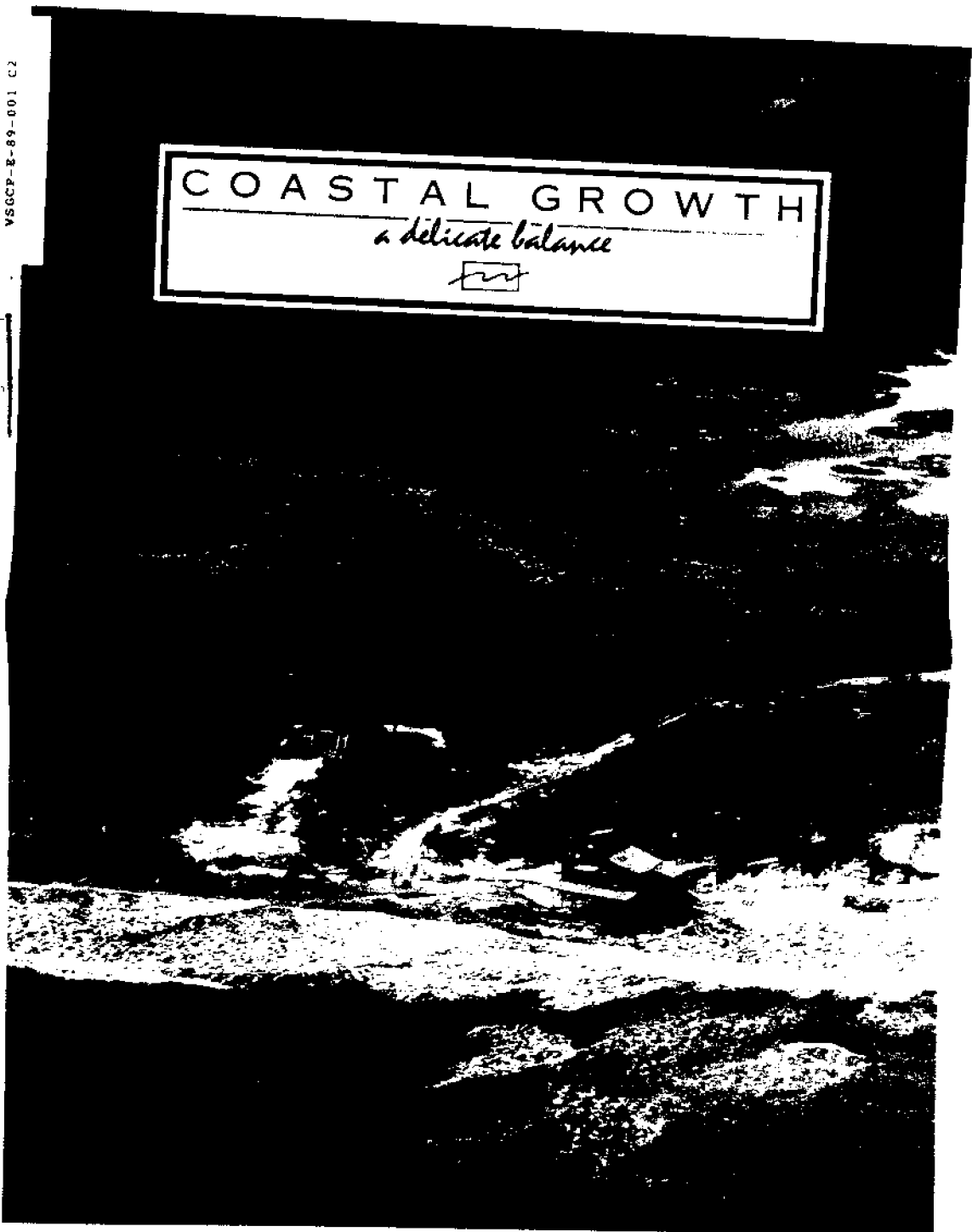


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COASTAL GROWTH

a delicate balance



Coastal issues: a study guide

Introduction

Tidewater Virginia, one of the nation's fastest-growing regions, is located in one of America's most beautiful and most fragile environments — the coastal zone.

By national standards, Virginia does a good job of protecting and enhancing the marine environment. Virginia's approach to forming public policy in this area has always relied on melding fact, need and public opinion into a consensus. This approach has created widespread citizen awareness and acceptance of a generally successful environmental policy.

The study guide and video documentary "Coastal growth: a delicate balance" provides information to teachers and secondary students on growth issues of current interest; shows the relationship of scientific information and processes to policy development and lifestyle; and emphasizes that solutions are both individual and political — requiring analysis, evaluation, public discussion and sometimes difficult compromises.

Video programming brings both a situation and the people involved into the classroom so students can view them firsthand. Short interview segments with officials, citizens and scientists help underline the human issues involved in coastal growth decisions. The study guide emphasizes dilemma discussion-based classroom activities which examine various perspectives and the political framework surrounding the issues. Also included are extension activities, use of newspapers, a map of Virginia's coastal areas, readings and resources.

The activities in this study guide address the goals and objectives stated in Virginia's Standards of Learning, specifically Science (1988) I-B guidelines 1 and 3, I-C guideline 1, I-D guidelines 4 and 5, II-8 guideline 3, II-C guideline 12, III-A guidelines 1 and 2, III-B guidelines 1, 2, 3 and 4, IV-A guidelines 3, 4 and 5, and Social Studies (1983) overall goals as described in the introduction and content strands "knowledge," "skills" and "democratic beliefs."

Classroom dilemma discussions develop analytic and decision-making skills necessary to understand complex issues. Through the activities presented in this study guide, students will examine four coastal issues from several perspectives. These activities guide students in:

- Encountering a variety of viewpoints
- Experiencing higher level reasoning
- Taking the perspective of others
- Examining and clarifying one's own ideas
- Examining the consequences and implications of one's own ideas
- Defending one's position
- Evaluating possible alternatives
- Considering and recognizing the role of self to society
- Reflecting on one's own value system
- Testing own ideas and those of others

Characteristics of dilemma discussion

- **Open-ended approach.** There is no single "right" answer. The goal is not to reach agreement but to critically discuss the reasons used to justify a recommended action. The emphasis is on why some reasons may be more appropriate than others.
- **Free exchange of ideas.** Students should feel comfortable in expressing their thoughts. Each student should have an opportunity to contribute to the discussion within a non-judgmental atmosphere.
- **Student to student interaction.** The conversation is primarily between student and student, not teacher and student. The teacher uses questions to guide the discussion and to encourage students to challenge one another. Lecture or recitation should be avoided.
- **Development of listening and verbal skills.** Each student should be intimately engaged in the discussion activity, building and expanding on one another's ideas as well as examining each response critically.
- **Focus on reasoning.** Reasons are to emphasize the prescriptive "should" rather than the "would" arguments.
- **Dilemmas produce conflict.** Conflict heightens student involvement and interest and should have a personalized meaning for the student. Resolution of internal conflict is a precondition for advancement to higher stage reasoning.

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Four specific lesson plans are presented on pages 4 and 5. Supplemental material for lessons is found on pages 5, 6, 7 and 8. All are based on individual and group analysis of issues and discussion of dilemmas, and all may easily be adapted to study of issues other than those presented in the video.

Teachers' guide

General instructions

Basic steps in the process

The four basic steps in conducting a dilemma discussion are as follows:

1) Presentation of the dilemma

After presentation of any introductory material, the dilemma may be read to the class as a whole, or each student may read the dilemma for himself/herself. At this point you may determine if the students fully understand the dilemma by asking:

- Do you feel this is a hard question to answer?
- Will someone please summarize the situation?
- What things might the main character have to consider in making a choice?
- What are the main points in the conflict?
- Who would be primarily affected by the decision?

2) Selection of alternative positions

This proceeds as appropriate to specific dilemma situations.

3) Discussions, small group and class

Dilemma discussions are usually conducted in small groups, followed by discussion by the entire class. Students often are more willing to speak out in small rather than large groups.

Groups should focus on the moral issues of the dilemma. To more personally involve students have them first express their feelings about the dilemma. Some preliminary questions for consideration might include:

- What issues in the dilemma are hard to talk about? What makes them difficult to discuss?
- Can you foresee yourself having to make such a decision?
- Do you know anyone who has had to make a similar decision?
- Have you recently read any news articles about similar dilemmas?
- How do you think you would feel if you had to make such a decision?
- When you have a problem, how do you think it through?

Discussion should include analysis of the information and facts given.

- How does the information influence the decision?
- What is inferred from the information presented?
- Were the facts provided sufficient for informed decision making?
- What additional information is desirable?
- How might one go about acquiring additional knowledge?
- On what basis does one sort out and analyze the facts given?
- To what degree does the information influence the decision towards one position or another?

Class discussion is most fruitful if the discussion guides students to explore ideas they have not considered. Seven types of probe questions guide discussion:

- (1) *Clarifying probe*: asking student to explain what he/she means in his/her statement. "What do you mean when you say that concealing evidence is immoral? What is the meaning of immoral?"
- (2) *Perception checking probe*: determining whether student understands a statement made by another individual. "Please explain to me what Joe has said."
- (3) *Issue specific probe*: examining student's thinking on the major issues: "Why should the government establish standards for air quality? What should good guidelines take into account?"
- (4) *Inter-issue probe*: resolving conflict when two or more issues appear to be at odds. "Should a richer country be allowed to use a greater share of the earth's resources?"
- (5) *Role switch probe*: placing student in the position of someone involved in the dilemma. "What would you do if you had to make that decision?"
- (6) *Universal consequences probe*: considering the implication of the judgment made when applied to everyone. "What might happen if every household were required to reduce its use of electricity by 30 percent? Is it fair to place such demands on everyone?"
- (7) *Reason seeking probe*: "how did you come to this conclusion?"

4) Summary and closing of discussion

Include discussion of how the classroom dilemma is similar to, and how it differs from actual situations.

Helpful hints

- Before beginning each lesson, review the dilemma to be discussed in class and try to anticipate any problems that students might encounter.
- Identify the main issues and list a few questions that clarify the issues for the students. How might these issues relate to the students' lives?
- Are there words or concepts that are unfamiliar to your students? Define and discuss them so students do not become confused by the terminology.
- If you have readings which are pertinent or appropriate, use them.
- Does the dilemma pose conflict for your students? Is it too sophisticated or too simplistic? Reword or alter if necessary, in order to elicit a division of opinion among students.
- Make sure the students understand the problem and the goal of the discussion activity. Have a student summarize the story and list some of the alternatives available to the main character(s).
- Group the students so that those who are more vocal do not dominate the discussion. Balance each group with different personality characteristics.
- If the discussion has difficulty getting started or gets bogged down, have the students role-play the main character. The shift in focus can assist them in gaining additional perspective into the situation.
- Try not to be too impatient if the discussion does not seem to go anywhere immediately. Some warm-up time may be necessary so that students can relax and reflect on their own thoughts.
- Students may continually look to you as teacher for direction and "correct" answers. When asked a question you can shift the attention by posing that question to another student and seek his/her opinion. In this way the dynamics of student interaction can be maintained.
- Taping recording some of the student dialogue may be useful to you as an evaluation tool to help organize future discussions and generate additional probe questions.
- It is important that the discussion does not drift aimlessly or become a clash of personalities. Skillful interjection of probe questions will provide direction to the group discussion; therefore, become familiar with the different types of probe questions so that you can use them with fluency.

Lesson #1

What are your plans for this land?

2-3 class sessions

Picture pack, pages 15-16

Do this activity **before** viewing video, "Coastal Growth: A Delicate Balance."

Materials

- Four color photographs of coastal sites, to be cut from the back page of this activity guide (picture pack).

Overview

Students, working together in small groups, will make some decisions about the use of coastal lands. Examples of different areas are illustrated by photographs. In developing a proposal for the use of a particular land parcel, students should take into account the information on the back of each photograph.

This exercise provides students an opportunity to take the perspective of a private landowner and gain some understanding of the reasons why coastal development has proceeded in certain directions.

The amount of information provided is intentionally scanty, giving students creative latitude to draw upon their own interpretations. This exercise will also help illustrate how we approached land use in the not-too-distant past, when building activity was unconstrained and our knowledge of environmental effects was more limited. The requirement that each board member support at least two proposals introduces an element of political pressure.

Procedure

- Have the students form into four work groups.
- Each group will work with one of the pictures from the picture pack.
- After students have examined the picture and read the accompanying caption, they will assume the role of owner of the property and present his/her idea on how he/she will make use of the land. The proposal may be developed using a variety of formats: verbal descriptions, diagrams, drawings, magazine pictures, photographs or a combination of these. Encourage the students to be creative in their presentation. Their explanations of the proposal need not be more than five minutes in length.
- The class will reassemble as an entire group for the "town meeting," and assume the new role of the town planning board.
- Representatives from each of the four groups will make their presentation.
- After all presentations have been made, board members may ask questions.
- The board members will then vote to approve or reject each proposal in turn. Board members must vote "yes" to at least two proposals. Remind students that they now represent town board members and should consider how the proposal might or might not benefit the town. Approval of two thirds of the board is necessary for a project to proceed.
- After completing this activity, point out to students that the photos in the picture pack were of several sites actually discussed in the video. Site #1 is in Sandbridge; #2 is Cedar Island; #3 is a tidal wetland; and #4 is Ware Creek. Then view the video. Following the video, compare and contrast the actual decisions made to the students' decisions.

Lesson #2

A beach survey

2-3 class sessions

Survey forms, page 13

Materials

- Beach survey form (page 13)
- Summary beach survey form (page 13)
- Or an original survey form designed by the class

Overview

The compilation and analysis of the survey results examine differing approaches to beach management as reflected in public vs. regulating public access to beaches. In conflict are the constitutional principles of property rights and the public trust doctrine. Information about beach access and usage will be derived from the student's personal experiences.

Procedure

- Conduct the survey. Have each student personally answer a survey questionnaire, if most students have had opportunities to visit beaches. If a number of students have never been to the shore, have the class conduct the survey as an outside project, interviewing friends or neighbors. Students should try to interview persons who have recently lived in another part of the country.
- You may reproduce and use the sample survey forms provided, or have your students design their own.
- Tabulate the results. The completed survey forms should be sorted into the following four categories: national park, state park, municipal beach and private beach. Divide the class into four groups to work on tabulating the results of each category on the summary score sheets. (Each student may fill out this sheet or a single form may be filled out for the group. However, having all students fill the form is a good learning exercise and further ensures student participation and interest.) There may be few responses in a category (e.g., national park beaches) and the number of students working on this category will need to be adjusted accordingly.
- Your experience with your students should determine the amount of instruction required for tabulating the results.
- Using data collected, have students (in groups or individually) analyze surveys, characterizing different approaches to beach management and commenting on the strengths and weaknesses of each.
- Use probe questions to guide students toward exploration of ideas that they may not have previously considered.

Extension/ supplemental activity

Students are probably already familiar with most of the vocabulary used in "Coastal Growth." Many terms, however, have specialized use or significance within the context of coastal resource management.

As an activity, break students into groups, and give each group a complete list of these terms, without definitions. Students should view the video to find or infer specialized meanings of the terms, discuss them among themselves and in open class, then turn in definitions developed by collaboration within the group.

barrier island	diversity	infrastructure	nutrient	rookery	watershed
beach replenishment	erosion	marsh	productivity	swamp	wetland
bulkhead	home rule	mitigation	property rights	toxin	zoning
cross-shore transport	incentives	non-tidal wetland	roller	water column	

Materials

- Student handout: "On the Beach" (page 6)

Lesson #3

Overview

In the preceding activity students compiled the background information for the discussion of the public beach access issue that underlies this dilemma. However, the question to be resolved in this dilemma is whether or not the boys should break the law. The activity is structured as a jury trial, and follows the basic procedures for conducting a dilemma discussion as suggested in the introduction (page 3).

The courtroom role-play simulation may be conducted after the dilemma discussion or conducted in place of the discussion activity. The legal conflicts surrounding the issue of beach access can be explored in depth in this activity.

Procedure:

- Explain the situation to the class: Barry and his friends have been caught trespassing. They are arrested and are now brought to trial. Each defendant will argue his or her own case before a judge and panel of jurors.
- Assign roles: Barry; friends (boys and girls, the number may be flexible depending on the size of the class); judge; prosecuting attorney(s).
- The remaining members of the class will serve as jurors. They will determine the guilt or innocence verdict of each defendant separately. They are to base their judgment on how well each defendant argues his/her case and the evidence/exhibits presented. A simple majority of votes will suffice in this simulation. (To heighten the simulation, the jurors may be instructed to pronounce an "innocent" verdict for only half of the defendants. This condition will challenge each defendant to prepare a well-developed, logical defense.)
- The judge will direct the trial, calling upon defendants in turn and maintaining courtroom decorum. He/she will keep track of the time allotted the defendants to plead their case. Determine a time limit prior to the trial.
- To increase student involvement, a different prosecuting attorney should cross-examine each defendant.
- In developing their defense, the students on trial may wish to pursue the following ideas:
 - The concept of the seashore as public domain held in common trust by the states.
 - The notion of levying a beach user's fee as discriminatory against non-residents.
 - The legitimacy of levying a fee for permit to access onto a public domain area — all sand below the high tide mark.
 - The lack or scarcity of public access thoroughfares in areas where much of the beachfront is privately owned.
 - The question regarding whether or not the rights of the public to beach access have been upheld.

On the beach

1-2 class sessions

Dilemma discussion questions, page 6

Materials

- Student handouts: Background, instructions, town committees' viewpoints (page 6)

Lesson #4

Overview

A simulated town council meeting is the format used for the discussion of this dilemma. The viewpoints presented by each committee should provide students with some understanding of the problems associated with development of beachfront property.

Procedure

- Review the background of the dilemma (page 6) with the class.
- Assign each student to one of the four viewpoint committees. Each group will state the position of the committee it represents. Students may be given copies of all the viewpoints and become familiar with all the positions before preparing their own case. All students serve on the town council.
- Determine in advance preparation time, length of each presentation and rules for questions and rebuttals.
- Read the following statements of arguments to the class before committee meetings:

Arguments presented at the town meeting

Jerry Knowles' argument: "I have worked hard and long for my land and home. This is my property and I have the right to build my home here. No one should tell me where I can or cannot build. When I bought the land I was allowed to build. If I were able to build then, why should I not be able to rebuild again? What good is my land if I can't use it? I paid a handsome sum for the beach front, and now it's worthless if I can't build on it. I'm willing to take the risk, because my family and I want to live here."

Sam Carter, lawyer who wrote the new town ruling: "This new ruling was enacted for everyone's benefit. Building on a storm-prone beach dune is sheer foolishness. It's not possible to be absolutely protected from the forces of nature. Sure, Mr. Knowles received insurance money for rebuilding. But where does that money come from? Our taxes! That means we are paying for his enjoyment of a beach home. Why should the public bear the responsibility of his foolish act? It's one thing to help someone out in a disaster. However, we can't continue to pay for rebuilding a house that may again be washed away."

"We also have to think about the importance of the sand dunes which protect houses further back inland. In time of storm, dunes help break the power of the storm waves. Forces of the wind and water are reduced, and damage to property further back is lessened. When buildings are put on sand dunes, roots of the grasses which hold the sand are loosened. Wind and waves can now easily carry off the sand and destroy the dunes. If dunes are left in the natural state they can rebuild again naturally after storm damage. Building on the dunes brings changes and prevents nature's own restoration process from taking place. This results in loss of much beach area."

How should the council decide?

- Students will meet in their committees and develop solutions to the problems. A spokesperson from each committee will then make a presentation to the town council.

Some classes may find that additional outside research can provide useful data to enhance their presentation. Some pertinent topics might include: beach erosion, sand dunes, coastal storms and property damage, real estate values on the coast, shore protection, and beach nourishment.

Home on the beach

1-2 class sessions

Instructions, viewpoints, page 7

Lesson 3 materials

On the beach

The day was hot and muggy without a trace of breeze. Barry and his friends could think of nothing to do; it was too hot to play any type of game. Then someone came up with the idea, "Let's ride our bikes over to Seaside and sneak onto their beach for a swim. I know a place along the fence where the lifeguard wouldn't be able to see us. None of us has the \$4 to pay the beach charge, but we could surely use a swim to cool off!"

The thought of a swim was most tempting to Barry, but he worried about getting caught. Only the people who lived in the town of Seaside could use the beach free of charge; people caught for not paying would be arrested and fined \$100 for trespassing. Should Barry go along with his friends? Why or why not?

Dilemma discussion questions

- Is it wrong for the youths to try to sneak in without paying? Why or why not?
- Is sneaking in without paying the same as stealing? Is it ever right to steal? Why or why not?
- Since the town maintains the beach, shouldn't it have the right to make the rules governing its use?
- Residents of beach towns pay taxes to keep the beaches clean and hire lifeguards. Should they not charge outsiders a fee to use the beach? Why or why not?
- Should the youths have to pay to use the beach when local residents use it free of charge? Why or why not?
- Should they be fined if they were caught? Why or why not?
- How might a beach community be affected if everyone tries to get onto the beach without paying?
- Should the people of a beach community have the right to determine who may use their beach? Why or why not?
- If you owned a house on the beachfront, would you want people tramping across your yard to get to the beach? Why? What might you do?
- Many people pay large sums of money for beachfront property. Should they be required to open their beach to anyone who wants to use it? Why or why not?
- Should people be allowed to build along the beachfront and keep the public off the beach? Why or why not?
- What good reasons are there to keep beaches open to everyone without charge? Who would pay for keeping the beaches clean and hire lifeguards?
- What might be the best way to make sure that everyone can enjoy the use of the beaches?

Following the world of science in the newspaper

The newspaper is the resource in the classroom that keeps students and teachers up-to-date with the world of science. Articles pertaining to science may be found in the following informational parts of the newspaper:

- News, including business news
- Editorials
- Features (the entertainment part of the newspaper that also includes food)
- Sports

Have students keep a science notebook under the headings listed above. Students should add articles clipped from the newspaper over the school year. Subheadings in news could also include "local," "state," "national" and "international."

Advertising in the newspaper may also be used in the science classroom. Advertising may be divided into the following three parts:

- Retail or display (those ads of companies/organizations that appear in geometric form in the newspaper or as inserted flyers)
- Classified (those ads in small type that are categorized into specific groups)
- Legals (those ads appearing because the law says the public must be informed as to its content)

Students may also have these headings in their newspaper notebook:

Information from the world of science should be shared regularly. A suggestion is a daily update with a weekly in-depth feature on material gathered by the students.

ACTIVITIES

VOCABULARY: Have students keep scientific words found in their newspaper in a part of their science notebooks. Such words would include "wetlands," "tides," "fission," "fusion," "orbit," "gravity," etc. Words may be moved to the study of the environment

MATH: (1) Have students keep a time chart for a week of sunrise and sunset and/or low and high tides. Groups and charts may be made, if applicable. (2) Have students chart for a certain time the temperatures in a city each has selected from the list of cities appearing with the weather map. Is the temperature rising or falling? How does this trend compare with student's own opinion?

PREDICTION: Discuss the weather map and the day's forecast. Have students study weather symbols and movement. Have students follow the weather forecast for a period of time. Keep a daily right/wrong record of the newspaper's forecast. What percentage of the time in a week was it correct? How about during a month? Discuss how weather predictions are made.

GEOGRAPHY: (1) Have students locate on maps where events are taking place in the world. (Every classroom should have world, U.S., state and local maps.) Have students locate over a period of time the cities listed with the weather map. Have each student report to the class about his/her selected city. (2) Have students follow daily activities in the local area, especially in own community and bordering communities. Have students locate on map these communities and natural boundaries in this area as well as in the state.

HEALTH: (1) From grocery ads, have students plan nutritious meals for a day or a week. Determine the approximate cost of each meal and of the shopping trip needed to obtain food for meals. Discuss nutrition and food groups while doing this activity. (2) From clothing ads, pick a small wardrobe for a particular season for a certain amount of money. (Let the class determine a reasonable amount, such as \$250 or \$300.) Discuss the four seasons and how they relate to health and environment.

HISTORY: (1) Have students study the classified ads and determine those that can be related to science, such as firewood, animals, boats, etc. Have students pick one of these items that interests him/her and research it. The student should relate it to present-day environment/situation. (2) Have students, in groups, pick a sport, research it and report it to class. Use newspaper clippings and photos to report present-day playing of sport.

READING: The newspaper is for reading, first of all. From reading, students and teachers gain a present-day perspective of the science world not found in out-dated textbooks. The newspaper should be an integral part of the science classroom every day.

(This article is by Billie Paxton Einselen, Educational Services Manager for the Daily Press/The Times-Herald, Newport News.)

Lesson 4 materials

Home on the beach

Background

Jerry Knowles lost his beachfront house during a recent hurricane. The strong winds literally lifted his house off the ground and smashed it against the house next door. Fortunately, Jerry had joined the government flood insurance program and was able to collect \$95,000 for the damages. With the money he plans to rebuild on his beach property, just as he did after a storm six years ago.

Although this area is frequently hit by severe storms, Jerry and his family love living by the ocean where they enjoy swimming and boating right in their front yard. They have lived here most of their lives and do not want to move elsewhere.

However, the town recently passed a new rule that created a problem for the Knowles family. The town council felt that it was unsafe to build houses so close to the water and ordered that all new buildings must be placed 300 feet back from the high tide mark. This meant that Jerry could not rebuild on his land, because his property extended back only 200 feet. He, of course, felt that this was most unfair and went before the town council to appeal the new ruling.

Instructions

Each student will serve as a town council member and represent one of the four committees.

Committee meetings

In your committee meeting, identify and discuss the major arguments presented by Mr. Knowles and Mr. Carter. Decide among yourselves the importance of each of the arguments from the viewpoint of the committee you represent.

What is the best solution for the Knowles case which will be fair for all persons? Your committee's solution will be presented at the next town council meeting, and the members will vote on the best solution. Therefore, it is important that you present good reasons for supporting your solution.

- What are the main issues?
- Who will benefit? Why?
- Who might have to make sacrifices? Why?
- Does it go against people's rights? Why?

Select members of your group to present the committee's recommended solution.

Town council meeting

The class meets as a single group to conduct the town council meeting. Each presenter will first identify the committee he/she represents and give a brief summary of the committee's point of view before presenting the solution developed by the committee.

After each committee presentation, council members will have an opportunity to question members of the committee. Upon completion of all the presentations the council may further discuss the issues before voting on the best solution to the problem.

Carefully consider the following questions before voting:

- What should be the responsibility of the council? Why?
- What should be the concern of good town government? Why?
- How can the rights of the people be best protected?
- Should the rules/law be fair to everyone? Why?
- Should the rules apply to everyone? Why?

Town committees' viewpoints

Real estate development committee — Viewpoint A: There is a shortage of houses in this town. With cars and good highways more people want to live by the ocean all year round and commute to work in the cities 75 miles away. To meet this housing need we must be able to build on much of our now empty beach property. Houses on this property will bring new taxes for our town. More tax money will mean that we will be able to build a community center and improve our storm damaged roads.

Right now houses here are very expensive, but if we can build along the beachfront more houses will be available. This will bring the cost of housing down and people will be able to afford living in a beach community.

The new ruling has drastically reduced the amount of property that can be built upon. There is little left for new development.

Beach management committee — Viewpoint B: The best protection we have for preserving our beaches and property is to leave our beachfront area in its natural state. When we build right up to the shoreline we lose much of the dunes. They serve as the first line of defense against the storm forces of wind and wave. Beachfront buildings have little protection. Yet, when damages occur, money from the disaster fund is used to help these property owners recover. In a sense, we are supporting the luxury enjoyed by beach property owners through our taxes.

Buildings on the beach disturb the dunes which help to protect property farther inland. There is also greater sand loss when dunes are no longer there to capture and hold the sand in place. Dunes also help to replace sand washed away from the beach.

Building on the beachfront often quickens the process of beach erosion. In order to keep our beaches and protect homeowners, we must limit beachfront development. Giving people the right to build on beaches takes away others' right to the natural resource of the beach and its many benefits.

Recreation committee — Viewpoint C: Beaches are a valuable natural resource that people can enjoy in many ways. As our cities become congested with people, traffic and smog, the shore offers a good place for relaxing and playing. But it is also a limited resource — there are only so many good sandy beaches for swimming and sunbathing.

We must protect our beaches for ourselves as well as for people living in the future. If we continue to line our beachfront with houses, high-rise hotels and shops, it will make it more and more difficult for people to get onto the beach.

More people living in the area will also mean more roads, garbage, air pollution and sewer lines. Much waste and road dirt will be carried out to the waters. Beaches can become polluted and unsafe for swimming and fishing.

Open beach areas are necessary so that many can take advantage of what the beach has to offer. Is it right to limit it to a few?

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Background:

Lure of the coast isn't without cost

"While our coastal areas are trying to accommodate more people and pavement, they're vulnerable to flood and erosion. In some areas, the fragile shoreline is literally being squeezed to death between people on one side and waves on the other."

by Joe West

Maybe it's some kind of primal urge that's calling us back to the sea. Maybe that's why so many people are settling near the shoreline. Half the American population now lives within 50 miles of a coast — and more and more people are moving toward it every day. The coastal population of the United States is growing three times faster than other sections of the country. This migration is putting incredible strains on the delicate ecosystem and the infrastructure in regions around the Chesapeake Bay and along Virginia's ocean shoreline.

Conservationists are fighting to implement ways to keep sediment, pollutants and toxins from draining off the land and into rivers and bays.

Local governments are scraping for money to build roads, pipelines and schools to accommodate a burgeoning population. New construction disturbs the land and this, in turn, sends more sediments and pollutants streaming into creeks and rivers.

While our coastal areas are trying to accommodate more people and pavement, they're vulnerable to flood and erosion. In some areas, the fragile shoreline is literally being squeezed to death between people on one side and waves on the other.

It's sort of ironic that some of the most popular places to live are right at the water's edge. People are plopping down small fortunes for a plot of sand; their homesites are especially vulnerable to high tides, flooding and erosion. And as the Earth warms, the sea level rises to claim more land.

On the Eastern Shore, for example, up to 1,000 feet of shoreline has been lost in some areas in the past century. A lot of the people who are moving to the water's edge are doing so with false assumptions of stability. It's difficult for them to picture the land at their doorstep washing away. Others are reassured by dunes and sea walls. Along the resort strip of Virginia Beach, more than a million dollars is spent each year in the oldest continuing beach-replenishment program on the East Coast.

Anyone willing to risk overcrowding, sky-high real estate prices, the threat of erosion and flooding — not to mention an occasional hurricane — in order to live by the sea should, at the very least, be prepared to meet inevitable challenges.

These challenges include the dynamic forces at work in the Chesapeake Bay and along Virginia's ocean coastline.

One of the basic forces is the movement of sand up and down the coast. Another is tidal action, often exacerbated by hurricanes and nor'easters, which can eat away at the shoreline.

Good examples of shorelines in motion are the barrier islands off the Delmarva Peninsula. These barrier islands are really sandbars on the move. Waves continually eat away at the eastern side of these islands and, during storms and washovers, deposit the sand on the western side. Some cottage owners who insisted on building on these strips soon discovered that their sand moved out from under them.

The ferocious force of the sea is very evident along these barrier islands, the first line of defense for the mainland. A 1987 U.S. News and World Report article on vanishing beaches noted that barrier islands are usually elastic and can absorb the pounding of waves. But when construction disturbs their dunes and vegetation cover, the islands are wracked by the full force of the sea, which can deliver a punch of 1,700 pounds per cubic yard. No wonder storms can cut through barrier islands, opening new channels and closing others.

Understanding — and respecting — this changing nature of the shoreline will give the seaside resident a chance of staying put for awhile. Even so, homes should be constructed as far back from the water as possible. Either that, or the homeowner should be prepared to move his house to higher ground later.

A common misconception about living near the water is that groins and bulkheads can control erosion and keep the sea at bay. Not so.

While a groin that runs out into the water from the shore may trap some sand, it starves the beach further down and may cause erosion. Bulkheads merely turn the force of waves downward and scoop out the sand at the base of the structure. That leaves the property owner with two alternatives: either repeatedly replace the washed-out sand or let the bulkhead tumble into the water.

Orin Pilley, a geology professor at Duke University, believes that maintenance of sea walls and replenishment of sand will eventually become too expensive for small resort communities. He dismally predicts that these towns will have to be abandoned to the advancing sea.

The latest demographic and environmental studies point to continued population growth and environmental degradation in coastal regions, especially around the Chesapeake Bay. A recent tri-state study predicted a 20 percent increase in population in the bay region by the year 2020. And a congressional report released in January 1989 echoed that same warning about the concentration of people along the coast, which could foreshadow more federal efforts to safeguard the waters.

Nothing seems to dampen the desire to live near the sea. The recreational and economic advantages, not to mention the

contemplation of great views, more than compensate for the higher living costs and traffic jams on bridges.

What coastal development really comes down to is a battle for turf, with builders and homeowners staking out their claim to the shoreline with talkhats. The most sane sea-side challenge that claim.

The smart money is on the sea.

(Joe West is an associate editor of the editorial page of the Daily Press and The Times-Herald. This article appeared on Sunday, Feb. 5, 1989, and is based on Living With Chesapeake Bay and Virginia's Ocean Shores by Larry G. Ward, published by Duke University Press.)



Photo courtesy of the Daily Press/The Times-Herald

The United States is losing one of its most valuable, and perhaps irreplaceable, resources — our wetlands. This natural heritage of swamps, marshes, bogs and other types of wetlands is disappearing at an alarming rate. Today, less than half of our nation's original wetlands remain.

In the late 1600s, there were over 200 million acres of wetlands in the lower 48 states but by the mid-1970s it was estimated that there were 99 million acres of wetlands — an area about the size of California. Between 1955 and 1975 alone, more than 11 million acres of wetlands were lost entirely — an area almost two and a half times the size of New Jersey.

BENEFITS

In their natural condition, wetlands provide many benefits including water quality improvement, flood protection, shoreline erosion control, natural products for human use, food, habitat and spawning grounds for fish and wildlife, and opportunities for recreation and aesthetic appreciation. One of the most important values of wetlands is their ability to help maintain and improve the water quality of our nation's rivers, estuaries and other water bodies. Wetlands do this by removing and retaining nutrients, processing chemical and organic wastes, and reducing sediment from flood waters.

Wetlands function like natural sponges, storing either flood waters that overflow riverbanks or surface water that collects in isolated depressions. When wetlands absorb flood waters, they reduce damage downstream. Trees and other wetland vegetation help slow the speed of flood waters. This action, combined with water storage, lowers flood heights and reduces the water's erosive potential. The stored water is then slowly released downstream as flood peaks recede.

Each wetland works in combination with other wetlands as part of a complex, integrated system that delivers these benefits and others to society.

- Many species of plants, birds, mammals, reptiles and amphibians, and invertebrates on the endangered species list depend on wetlands during some phase of their life. Examples include the manatee, Florida panther, whooping crane, Everglade kite, American alligator, Schaus swallowtail butterfly, and pondberry.

- A major part of the commercial and recreational fish catch in the United States is comprised of species that use wetlands as a food source, or as a habitat, during some part of their life cycle.

- Wetlands contribute commercially to support a fur and hide harvest worth \$300 to \$400 million annually, and are the basis for over \$10 billion in annual expenditures on nature study, fishing, hunting, and other outdoor recreation.

- Wetlands have always been among the most fertile and productive ecosystems on earth. They can be as productive as the most productive cultivated lands.

- Wild rices, marsh hay, and hardwood trees are among the commercial crops harvested in wetlands.

LEGAL TOOLS

Currently no comprehensive federal law for protecting wetlands exists. The major federal regulatory program for wetlands is Section 404 of the Clean Water Act, which is jointly administered by EPA and the U.S. Army Corps of Engineers.

The law authorizes EPA to prohibit or restrict the use of a wetland for discharge of dredged or fill materials if the agency determines that the proposed discharge will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishing areas, wildlife, or recreational areas.

Regulation of wetlands is not limited to the federal level. Over the past three decades, numerous states have enacted laws to regulate activities in wetlands, and some towns have adopted local wetlands protection ordinances. States also have important authority under the Clean Water Act and the Coastal Zone Management Act to certify that federal activities are consistent with state requirements. Although most coastal states have laws protecting coastal wetlands, fewer than 20 states have laws specifically regulating activities in inland wetlands. Several states also have acquisition programs for important state resources, including wetlands.

PUBLIC ACTION

Pressures to degrade and destroy wetlands continue as there is an increase in the demand for areas to develop. Even if losses were controlled, the insidious problem of degradation of wetlands from waste discharges, urban encroachment, ground-water withdrawals, partial drainage, and other actions still requires attention.

Many opportunities exist for private citizens, corporations, government agencies, and others to work together to slow the rate of wetland loss and to improve the quality of our remaining wetlands. First, states and local governments need to establish programs to effectively protect all wetlands within their borders. Second, individual landowners and corporations own many of the nation's wetlands and are in key positions to determine the fate of the wetlands they own. Finally, every citizen can help protect wetlands by supporting wetland conservation initiatives, such as the following:

- Rather than drain or fill wetlands, seek compatible uses involving minimal wetland alteration, such as waterfowl production, fur harvest, hunting and trapping leases, selective timber harvest, and use of "hay and rotate" farming practices.

- Select upland sites for development projects rather than wetlands, and avoid wetland alteration or degradation during construction.

- Donate wetlands or funds for purchasing wetlands to private or public conservation groups or agencies.

- Support various wetland conservation initiatives by public agencies and private organizations.

- Maintain wetlands in and adjacent to buffer strips as open space.

- Participate in the Clean Water Act Section 404 program, by reviewing public notices and, in appropriate cases, commenting on permit applications.

- For further information about wetlands, write Public Information Center, EPA PM 211 B, 401 M Street, Washington, D.C. 20460 or call (202) 382-

The article above is excerpted from an Environmental Backgrounder on Wetlands, published by the Environmental Protection Agency.

Background:

Vanishing wetlands provide priceless benefits

"Pressures to degrade and destroy wetlands continue as there is an increase in the demand for areas to develop.

Even if losses were controlled, the insidious problem of degradation of wetlands from waste discharges, urban encroachment, ground-water withdrawals, partial drainage, and other actions still requires attention."



Photo courtesy of the Daily Press/The Times Herald

Background:

Virginia's wetlands policy

by Thomas A. Barnard, Jr.

Virginia's management of its wetland resources began, though few if anyone realized it at the time, with the passage of House Joint Resolution 59 of the 1966 Session of the General Assembly. The Virginia Marine Resources Study Commission, created by this resolution, issued a final report which in addition to other recommendations focused attention for the first time on the values of the Commonwealth's tidal wetlands. Heretofore they had been thought of by most Virginians as areas fit only for the production of vermin such as mosquitoes or alternatively, to be filled, dredged or drained for development purposes. It would take six years, several scientific studies, numerous meetings and public hearings, but out of this circuitous political maze would emerge a balanced tidal wetlands protection act suited to the Commonwealth and the political, economic and social realities of the late '60s and early '70s. It is interesting to note that in the several public hearings held across the Tidewater region no one spoke against the principle of wetlands protection. Many groups, however, expressed fears and concerns with specific aspects of the bill and offered modifications, some of which were instrumental to the passage of the bill in 1972.

During the years between 1966 and 1972, numerous bills designed to protect tidal wetlands were drafted, some hurriedly and some with careful deliberation. In 1971, House Joint Resolution 60 created the Wetlands Study Commission, charged with coming up with the legislation necessary for state and local governments to protect this fragile, complex and ecologically valuable wetland resource for future generations.

Concerns were expressed at several public hearings that wetlands protection might severely compromise the rights of private property owners. To some, the proposed law also represented an attempt by the state to remove the time-honored prerogative of localities to determine land use within their political boundaries. Others argued that at best any bill adopted might create an oppressive, bureaucratic infrastructure whose cost and complexity would significantly interfere with and unnecessarily place long delays in the path of activities conducted by property owners on their own land.

As it became clear through actions of the General Assembly that state control of wetlands in private ownership was politically unacceptable and that local control of land use in these fragile wetland habitats might be the preferred approach, many expressed doubts as to the efficacy of placing the wetland protection mechanism in the hands of ill-equipped local governments. It was argued that local boards would not only be unable to deal with complex scientific definitions and principles, but also that they would be too vulnerable to cronyism and "good ole boy" politics. Local governments, it was stated, would be too caught up in arguments favoring expansion of the local tax base to deny their friends and neighbors the development rights to wetlands in their own jurisdictions. The same argument was expressed in regard to enforcement of the law and the prosecution of those involved in illegal activities in the wetlands.

The bill which finally emerged from the legislative process was one which vested wetlands protection with the localities but with state agency oversight and state standards for the use and development of wetlands. Also included was a strong element of public participation through a public hearing and appeal process. The Virginia Marine Resources Commission was charged with reviewing all local decisions for uniformity and appropriateness and the Virginia Institute of Marine Science, now part of the College of William and Mary, was mandated to provide technical expertise and educational assistance.

During the intervening years since the Virginia Wetlands Act was passed, it has proven to be a remarkable, though certainly not perfect resource protection mechanism. In general, the wetlands boards have emerged as effective mediators of wetland protection in the state, property rights remain basically intact and the state has not ridden roughshod over local land use prerogatives. The primary reason for the overall effectiveness of the act in conserving wetlands within the state is the quality of the people who have been appointed to local wetlands boards and the vigor with which they have approached their duties. In general, most of the appointees have been conservation rather than development oriented. Many were and are closely associated with the water as property owners, sports and commercial fishermen or environmentalists. They were already aware or recognized fairly soon after their appointments the value of tidal wetlands serve within the Bay and have preserved the wetlands while allowing development to continue in suitable areas.

Although the Wetlands Act has not been fully tested within the judicial system, lower courts have upheld the right of localities and the state to control activities in wetlands for the benefit of the public health, safety and welfare.

Questions remain with regard to the adequacy of the financial and technical assistance available to local boards, how they take into account the cumulative and upland impacts of their actions and the adequacy of monitoring and enforcement efforts. Be that as it may, the Wetlands Act has achieved its purpose and has been a model for other legislation.

In recent sessions, the General Assembly has considered passage of legislation which would extend protection to nontidal wetlands, the more inland counterpart to coastal swamps and marshes. Even though grass-root support for wetlands protection is high and research has demonstrated high public values attributable to nontidal wetlands, many of the fears expressed over a decade ago regarding tidal wetlands protection have resurfaced with regard to the proposed nontidal wetlands bill. Extending protection to these more inland lowlands may pose more difficulties than did consideration of the tidal wetland bill in the early '70's. State authorities have begun to explore using existing safeguards to protect nontidal wetlands in view of difficulties encountered in legislative sessions in 1988 and 1989 in passing new legislation.

Many nontidal wetlands have unique values in water supply protection, flood storage and floodwater conveyance not shared by their tidal counterparts. In some respects nontidal wetlands may be more important than their tidal counterparts in the areas of non-

point source pollutant control, sediment control, endangered species and wildlife habitat. The problem is that it is more difficult to convince the public in general and development interests in particular that these values represent economic and social benefits for the future.

It is also more difficult to see the value of nontidal wetlands to the protection and enhancement of Chesapeake Bay due to their generally higher elevations with only periodic or seasonal flooding and their general locale inland of the tidal wetlands and Bay waters. Also problematic with regard to nontidal wetlands is the fact that their protection is more directly in conflict with development interests due to past development practices stemming from the proximity of the resource to already developed upland areas and the relative ease with which they can be ditched and drained in order to accommodate construction. Finally, the adverse effects of developing such areas may not be immediately apparent to the casual observer and often may occur well away from the development itself.

As the General Assembly debates non-tidal wetlands legislation amid the reverberations of recent research reports demonstrating our manipulation of the environment on a truly global scale, it is clear that we cannot continue to allow growth and expansion at the expense of the natural systems which surround and support the Bay without regard to the environmental consequences. The history of the tidal wetlands statute demonstrates that we can achieve a balance between resource protection and necessary economic development, but we must take a realistic long-term view of the consequences of our actions and what we see happening in the Chesapeake Bay environs in order to properly define and strike that balance.

(Barnard is a wetlands ecologist from Bena, Virginia.)

"...it is clear that we cannot continue to allow growth and expansion at the expense of the natural systems which surround and support the Bay without regard to the environmental consequences."



Photo courtesy of Dr. Daily Press/John Thoms Herald

Beach survey

Lesson 2 materials

- What beach did you last visit?
 Name of beach State
- The beach was a (check one)
 national park private beach club
 state park privately owned beach (e.g. house built on beach)
 municipal beach hotel/motel beach
- Did you have to pay to use the beach?
 yes no
 If yes, approximately how much did each person pay?
 about \$1/day \$2-\$3/day
 over \$3/day
 Was a beach tag or other type of identification needed?
 yes no
 Does the beach allow only members or residents?
 yes no
 If the beach was a private club beach, how much was the membership fee? _____
- What other fees did you or your family pay? (check items)
 parking locker room/shower
 other - please list below _____
- The beach was
 crowded uncrowded
 Does the beach limit the number of people that it can accommodate?
 yes no
 unknown
- The area around the beach was
 undeveloped (natural state, e.g. dunes, rocky cliff, with a few surrounding buildings or other manmade structures)
 developed (housing; motels/hotels/shops; sidewalks)
- Was there litter on the beach?
 yes no
 Were trash receptacles provided?
 yes no
- Check those facilities or services that are found at the beach you visited
 amusement rides food and game concessions
 boardwalk lifeguards
 gates and fences camping facilities
 piers restrooms/showers
 other (specify) _____
- What did you do at the beach?
 water sports (swimming, surfing, etc.)
 fishing, clamming, crabbing, etc.
 sunbathing amusement rides
 games camping
 other (specify) _____
- Were there any rules stating what types of activities were prohibited on the beach?
 yes no
- What did you like most about this beach?

- What did you like least about this beach?

- Briefly describe your feelings or impressions of this beach:

Summary of beach surveys

State Park Beach

Number _____ total
 Location: east _____ west _____ gulf _____
 Fee: none \$1/day \$2-\$3 day over \$3/day
 beach tag
 Other fees:
 parking
 locker room

Beach conditions:

crowded uncrowded
 developed undeveloped
 limit capacity littered

Beach facilities

amusement rides
 food & concessions
 boardwalk
 restrooms
 lifeguards
 gates, fences
 campgrounds
 piers
 trash cans

Restrictions:

Municipal Beach

Number _____ total
 Location: east _____ west _____ gulf _____
 Fee: none \$1/day \$2-\$3 day over \$3/day
 beach tag
 Other fees:
 parking
 locker room

Beach conditions:

crowded uncrowded
 developed undeveloped
 limit capacity littered

Beach facilities

amusement rides
 food & concessions
 boardwalk
 restrooms
 lifeguards
 gates, fences
 campgrounds
 piers
 trash cans

Restrictions:

Private (club, residence, hotel/motel)

Number _____ total
 Location: east _____ west _____ gulf _____
 Fee: none \$1/day \$2-\$3 day over \$3/day
 beach tag
 Other fees:
 parking
 locker room

Beach conditions:

crowded uncrowded
 developed undeveloped
 limit capacity littered

Beach facilities

amusement rides
 food & concessions
 boardwalk
 restrooms
 lifeguards
 gates, fences
 campgrounds
 piers
 trash cans

Restrictions:

Resources

Leaflets, posters, trips and more

•For a packet of student readings on coastal growth and instructions on using newspapers as an instructional tool, contact

Billie Paxton Emselen
Educational Services
Daily Press/The Times-Herald
7505 Warwick Blvd.
Newport News, VA 23607
(800) 543-8908
(804) 247-4920

•In-school programs, K-12, on environmental concerns related to the Chesapeake Bay are available at no cost from

The Bay Team
VIMS
Gloucester Point, VA 23062
(804) 642-7172

•**CBF Landsat photograph** of the Chesapeake Bay (as shown in centerspread of this curriculum guide). A 25x38-inch poster in full color showing cities, towns, farms, roads and geographical features in incredible detail. \$19.95 paper, \$29.95 laminated. Also from CBF: fact sheets: **Septic Systems and the Bay; A Guide to Household Hazardous Waste; Detergents, Phosphorus and the Bay; Wasted Water Means Wastewater; Soil Conservation Around Your Home; Water Conservation; and Oil Recycling: A Boost for the Bay.**

Chesapeake Bay Foundation
162 Prince George Street
Annapolis, MD 21401
(301) 268-8816

•You can request the following items from the Virginia Division of Litter Control or from your local Clean Community Commission:

- information on starting an ecology club
- An Idea Notebook for Elementary School Teachers on Litter Control (19 page booklet)
- Guide to Household Recycling (leaflet)
- information on Operation Waste Watch kits (a set of litter awareness and control projects)

Virginia Division of Litter Control

1215 Washington Building

Richmond, VA 23219

•For the leaflet **Be Water Wise** and other information on water conservation, write:

Virginia Water Resources Research Center
Virginia Tech
617 North Main St.
Blacksburg, VA 24060-3397

•An excellent source for conservation ideas is **Baybook: A Guide to Reducing Water Pollution at Home** (132 page booklet) available from **The Alliance for the Chesapeake Bay, Inc.**

6600 York Road

Baltimore, MD 21212

(301) 377-6270

•**Chesapeake Bay: Introduction to an Ecosystem** (\$1.00), a summary of the ecology and problems of the Chesapeake Bay; **Chesapeake Bay Education Resources Directory** (\$4.00), a guide to curricula, A-V and field trips; and **Chesapeake Bay Teaching Materials Lending Library Catalog** (free) are available from:

Virginia Institute of Marine Science
Sea Grant Publications
Gloucester Point, VA 23062
(804) 642-7170

•Professional organizations for teachers and administrators interested in environmental and aquatic education:
Virginia Environmental Education Association
(804) 367-0188
Mid-Atlantic Marine Education Association
(804) 642-7172

•**Project Wild**. A K-12 interdisciplinary, supplementary, environmental and conservation education program emphasizing wildlife.
Susan Gilley
Virginia Department of Game and Inland Fisheries
P.O. Box 11104
Richmond, VA 23230-1104

•**Conservation Education Course**. Four semester hour graduate level conservation course offered each summer at Virginia Tech, VSU, William and Mary and George Mason University. Forestry, geology, wildlife, soils, water resources, and more.

Virginia Resource-Use Education Council
c/o Bernard L. Parsons
Seitz Hall, Room 203
Virginia Tech
Blacksburg, VA 24061-7098

•**River Times**. A set of 11 science and social studies activities focusing on Virginia's James River. For information on the materials and training workshops, contact:
Mathematics and Science Center
Richmond, VA
(804) 788-4454

•**Bay Information Hot Line**. For information about the Chesapeake Bay, call toll-free (800) 662-CRIS.

•**The Chesapeake Bay Bibliography** contains over 7,500 citations on the science, history, and management of the Bay. Call VIMS at (804) 642-7114 for information on accessing the system.

•A comprehensive reference for Chesapeake Bay studies, including fisheries, economics, SAV, plankton, toxic nutrients, management and more is **Contaminant Problems and Management of Living Chesapeake Bay Resources**. 574 pp., \$40. Available from:
Pennsylvania Academy of Science
Latayette College
Easton, PA 18042

•You can arrange field trips or special programs with the following organizations:

Chesapeake Bay Foundation
11 South 12th Street, Suite 114
Richmond, VA 23219
(800) 445-5572 or (804) 780-1392

Virginia Marine Science Museum
717 General Booth Blvd.
Virginia Beach, VA 23451
(804) 425-3476

The Mariners Museum
Newport News, VA 23606
(804) 595-9398

Virginia Living Museum
524 J. Clyde Morris Blvd.
Newport News, VA 23601
(804) 599-4897/595-1900

Hampton Roads Sanitation District
Williamsburg Treatment Plant
200 Log Cabin Beach Rd.
Williamsburg, VA 23185
(804) 874-2771

Watermen's Museum
45 Water St.
Yorktown, VA 23440
(804) 898-3180/898-6512

Hamson Lake National Fish Hatchery
Route 2, Box 341
Charles City, VA 23030
(804) 829-2421

Rappahannock Preservation Society
P.O. Box 66
Topping, VA 23169-0066
(804) 758-2569

Virginia Division of Parks
1201 Washington Building
Capital Square
Richmond, VA 23219
(804) 786-2132

Order form for video, study guides

Copies of the documentary, "Coastal growth: a delicate balance," and this study guide are available upon request. With each videotape order you will receive one copy of the study guide; for each order, please enclose \$5.00 for postage and handling. Up to 10 extra study guides may be ordered at no additional cost; additional copies are \$.30 each.

___ Please send one copy of the videotape
___ Please send ___ copies of the study guide

Payment is enclosed:

\$5.00 Postage and handling for videotape
_____ Extra study guides at .30 each
_____ Total

Please make checks payable to:

1 Video Productions, Inc.
2 Eaton Street, Suite 705
Hampton, VA 23669

Mail order to:
1 Video Productions, Inc.
2 Eaton Street, Suite 705
Hampton, VA 23669

Please allow 3 weeks for delivery.

Please mail tape and study guides to:

Name _____

Address _____

City _____ State _____ Zip _____

What are your plans for this land?

Questions for consideration

1. After you have examined the picture and read the caption, take the role of the owner of the property. Your ideas may be different from the person you represent. However, your task is to represent him/her and make sure his/her concerns and needs will be satisfied. Develop the best proposal for the use of this land; this will be presented at a town meeting. You will need to convince the town board to allow you to use your land this way.
2. All the members of your group will be representing the same person, so first decide among yourselves what is most important to this person.
 - Why does the person want to develop the land? Profit? Own enjoyment? Town needs? If the person wanted to make a profit, what use would bring the greatest profits?
 - How might this land be affected by building?
3. The caption may not include all the information about the picture. Examine the picture closely, and write down some other things you observe and conclude.
 - What plants live here?
 - What animals might use this land?
 - How important is this area to these animals?
 - How might this land be affected by building?
4. The person you represent has considered several choices.
 - What do you think about these choices?
 - Are there any other choices you might want to include or substitute?
5. Select a type of development (or no development) for this property. In making a decision think about:
 - Who might benefit from this type of development?
 - Who might not want to see this land changed?
 - What changes would come about if the land were developed?
6. You will present a five (5) minute proposal describing how you will use this land. In this presentation you will have to convince the town planning board to allow you to use the land in this way, so include all the advantages you can think of.
7. To make your presentation interesting and appealing, you may wish to include:
 - diagrams
 - illustrations/drawings
 - pictures (photographs or pictures from magazines)
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1. After you have examined the picture and read the caption, take the role of the owner of the property. Your ideas may be different from the person you represent. However, your task is to represent him/her and make sure his/her concerns and needs will be satisfied. Develop the best proposal for the use of this land; this will be presented at a town meeting. You will need to convince the town board to allow you to use your land this way.
2. All the members of your group will be representing the same person, so first decide among yourselves what is most important to this person:
 - Why does the person want to develop the land? Profit? Own enjoyment? Town needs? If the person wanted to make a profit, what use would bring the greatest profits?
 - How might this land be affected by building?
3. The caption may not include all the information about the picture. Examine the picture closely, and write down some other things you observe and conclude.
 - What plants live here?
 - What animals might use this land?
 - How important is this area to these animals?
 - How might this land be affected by building?
4. The person you represent has considered several choices.
 - What do you think about these choices?
 - Are there any other choices you might want to include or substitute?
5. Select a type of development (or no development) for this property. In making a decision think about:
 - Who might benefit from this type of development?
 - Who might not want to see this land changed?
 - What changes would come about if the land were developed?
6. You will present a five (5) minute proposal describing how you will use this land. In this presentation you will have to convince the town planning board to allow you to use the land in this way, so include all the advantages you can think of.
7. To make your presentation interesting and appealing, you may wish to include:
 - diagrams
 - illustrations/drawings
 - pictures (photographs or pictures from magazines)
8. Group members may each present a part of the proposal or a spokesman may be selected to represent the group.



#1 Site is prime oceanfront in a residential area, which has recently needed to be redeveloped. Some ideas for use: condominiums, park sites.



#2 Site is pristine, undeveloped migrating barrier island. Some ideas for use: wildlife refuge, vacation homes.



#3 Site is a tidal wetland. Some ideas for use: hotel with bulkhead, campground.



#4 Site is a swamp. Some ideas for use: drain for housing, flood for reservoir, make state park.